

best acceleration. They show that although high acceleration means low energy per ton-mile, it does not necessarily mean low running cost, because the cost of substations and feeders increases considerably with the acceleration provided for. All these matters are treated from a thoroughly practical point of view.

The second volume begins with a chapter on the theory and design of the polyphase railway motor, with useful examples of such motors as applied to the Valtellina and other lines; then follows control, overhead equipment, rolling stock, energy consumption, and other details. In view of the increasing importance of single-phase working, the authors have done well to restrict the three-phase part of the book and to devote the space saved to the more recent single-phase system. Here they break new ground by going at some length into the question of single-phase commutator motors, both with and without commutating poles, compensating winding, and other refinements. There is, however, a certain ambiguity about the motors described, and the reader will not find it easy to know what particular type is meant, especially as diagrams of windings and vector diagrams are too sparingly used. Neither will he find mention of the designers by the names of which particular motor types have become known; there is no mention of Lamme, Fynn, Winter-Eichberg, Richter, Latour, and so on, yet each of these men have produced distinct types. To give an instance of the ambiguity: we are told that the London Bridge to Victoria line is being equipped with "compensated repulsion motors," but nothing is said of the particular type being the Winter-Eichberg.

The chapter on overhead work is distinctly good, both as a theoretical treatise and as a collection of examples from the best modern practice, whilst the chapters on feeders, inductive drop in rails, energy consumption, and capital outlay on single-phase railways will repay careful study on the part of the engineer who has work of this kind to design.

GISBERT KAPP.

#### VETERINARY ANATOMY.

*The Surgical Anatomy of the Horse.* Part ii. By John T. Share-Jones. Pp. xii+190. (London: Williams and Norgate, 1907.)

WHY do British veterinary anatomists adhere so tenaciously to a nomenclature which is absolutely indefensible? Many of the terms at present employed in the various English text-books on the anatomy of the domestic animals are admittedly unsatisfactory; yet British veterinary writers persist in their use, with the result that a Continental reader wishing to consult an English work is put to an infinity of profitless trouble. Not only are the English names incompatible with comparative anatomy; sometimes they are strikingly absurd. No more deplorable instance of misdirected ingenuity is to be found than in the names given to the three phalanges. The first phalanx rejoices in the name of "*os suffraginis*." Not only is this an unknown expression in scientific anatomy, it is also the outcome of error. Its inventor—possibly a French writer, be it said—completely mis-

took the meaning of the Latin word *suffraginis* (*suffraginis*), which is generally defined as "the ham or hough of a quadruped's hind leg," and is used by Pliny and others as opposed to *armus*. If, then, an *os suffraginis* is to be recognised, it seems more reasonable to regard it as the femur. It certainly is not the first phalanx.

The second phalanx is known to the quasi-scientific veterinarian as the *os coronae*, a term which may be passed over by saying that the only defence for its use is the application by the stable-man of the name *coronet* to the region of the limb in which the bone is situated. To speak of the third phalanx as the *os pedis* is to subvert the meaning of the word *pes* as used in anatomy. The *pes* of the scientific anatomist includes the tarsal, metatarsal, and phalangeal regions of the posterior or pelvic limb; and has its parallel in the *manus* of the anterior or thoracic member.

In no part of the body are objectionable terms applied so frequently as in the limbs. This is doubtless due to the extreme degree of modification from the mammalian type which has been produced during the evolution of the modern horse, a modification so marked as to lead the original inventors of veterinary anatomical nomenclature to devise terms which to them seemed fitting, irrespective of their incompatibility with anatomical terminology in general. The time has come, however, when there is little excuse for aberrations. The BNA was devised with the intention that it should make the writings of an anatomist easily intelligible to his brother men of science. Works on anatomy, whether they be purely anatomical or partly surgical, should embody the universal nomenclature. If thought necessary, as is doubtless the case in books written largely for the practitioner, the customary English equivalents might be set down side by side with their Latin synonyms.

Mr. Share-Jones, in the volume before us, employs exclusively the undesirable names found in other English text-books, with the result that he cannot expect to appeal to a wider circle of readers than those who speak the English tongue. What exactly the aim of Mr. Share-Jones may be is difficult to determine. He certainly cannot claim to have produced a surgical *anatomy*, since he deals at some length with fractures and other traumatism, diseases, symptoms, and even treatment. How far he was justified in including such subjects as "sore-shins," "breakdown," "speedy-cutting," &c., in a work entitled "*The Surgical Anatomy of the Horse*" is doubtful; but it is beyond question that microscopic structure is out of place in such a production.

Reputable books on anatomy—surgical or otherwise—are now produced with illustrations which may be termed artistic without doing violence to the English language. Indeed, the illustration of scientific works in general is now an art in itself. This being so, a work the value of which depends mainly upon its plates is apt to be judged by a fairly high standard. Most of Mr. Share-Jones's figures would not stand such a judgment. Apart from their execution, it is difficult to see why some of them are printed on so large a scale as to require quarto plates. It is, further,

not easy to decide on the value to the surgeon of large plates showing merely the bones of the shoulder and elbow joints, or figures of the various bones of the limb, or purely diagrammatic representations of the arterial arches and veins.

As the surgeon is well aware, veins are very much larger than the arteries they accompany. Figures of sections, therefore, should show this; and, in order that they may do so in a serviceable manner, should be made from formol-hardened bodies. Again, in the limbs, not infrequently two veins accompany an artery; and this is especially common in the region illustrated in plate ix. Figures of sections, furthermore, should be accompanied by some key to the precise level at which the cut has been made. In some regions, as, for example, about the carpus, a very small deviation in the level of two sections produces an appreciable difference in their appearance. The relationship of the vessels, &c., in plate xxi. may be correct, but where is the tendon of the flexor carpi radialis? Plate xxv., though semi-schematic, should show the slip passing from the tendon of the extensor communis to that of the extensor digiti minimi.

It is evident that the writer has been too ambitious, and has endeavoured to display encyclopædic knowledge in an utterly inadequate space. Consequently some subjects have had to be treated in a manner all too brief. A description of the nerve to the latissimus dorsi in three lines and two words, or of the subscapular nerve in two and a half lines, is of little value to the surgeon and none at all to the student.

The volume before us forms the second part of the complete work, and deals with the anterior limb. The printers and publishers are to be commended for their share of the work.

#### THE ROMANCE OF SAVAGE LIFE.

*The Romance of Savage Life, describing the Life of Primitive Man, his Customs, Occupations, Language, Beliefs, Arts, Crafts, Adventures, Games, Sports, &c.* By G. F. Scott Elliot. Pp. 384. (London: Seeley and Co., Ltd., 1908.) Price 5s.

A POPULAR yet accurate account of savage life would supply an obvious want; and though Mr. Scott Elliot's contribution is interesting and readable, it still leaves the field open to some more competent writer. The model for a book of the kind is the "Anthropology" of Prof. Tylor, a volume popular and at the same time truly scientific, with which Mr. Elliot does not seem to be acquainted. Like this it might dispense with a bibliography and footnotes. Mr. Elliot, however, professes to give references, but these and his list of authors are inadequate. If authorities are to be quoted full references should be given, and it is worse than useless merely to name without further detail books like Gibbon's "Decline and Fall" or the "Polynesian Researches" of Ellis.

A bibliography, again, which ignores Messrs. Spencer and Gillen and Dr. Howitt's last book on Australians; Col. Dalton, Sir J. G. Scott and Mr. Thurston on Indian forest tribes; Catlin and Schoolcraft on North American Indians; Dr. Rivers on the

Todas; Miss Kingsley and Col. Ellis on West Africa; Dr. Haddon's "Cambridge Expedition to Torres Straits"; the Journal of the Folk-lore Society; and last, but not least, the works of Dr. Frazer when totemism, death rites, and savage religion are discussed, is obviously of little value. The ethnographical chapters are naturally the best part of the book; but when the writer deals with the theory of the ghost as affecting methods of disposal of the corpse, with the belief in a future life, and with savage animism generally, he is evidently on unfamiliar ground.

It may seem hard to tax a popular writer with inaccuracies and omissions such as these. But if, as he might reasonably have done, he frankly declined to quote authorities, the case would have been different. When he professes to write in a scientific way he is bound by the laws which govern scientific work; and this is the more necessary in the case of anthropology, which claims to be an exact science. Finally, the time is past when a book like this can be illustrated by fancy drawings of prehistoric men attacking a bemired mammoth, or of a young lady of the Swiss Lake-dwelling period doing up her back hair. It would have been much more instructive to supply photographs of modern savages at home, of the horses of La Madelaine Cave, or the man and bison from Laugerie Basse.

Even with all these drawbacks the book is a readable contribution to the excellent series of which it forms a part. Mr. Scott Elliot, without any pretensions to style, writes pleasantly, and though his personal experience of wild men seems to be confined to a part of Africa and Madagascar, he possesses a sufficiently vivid imagination to grasp the relation of the savage to his environment. From a comparison of their mode of life with that of Fuegians and Tasmanians, he is able to give a vivid sketch of life in the Cro-Magnon and Lake-dwelling periods, and his accounts of savage war and weapons, boats and huts, cookery and dancing, are often well done. The book will supply excellent reading to an intelligent boy, and may lead him to study the scientific literature of the subject.

#### OUR BOOK SHELF.

*Die Vegetation der Erde.* VII., Die Pflanzenwelt von West Australien südlich des Wendekreises. By Dr. L. Diels. Pp. xii+413. (Leipzig: W. Engelmann, 1906.)

THE Australian flora is of extraordinary interest, not only by reason of the complex problems connected with its origin and development, but also on account of the wonderful range of adaptation to their environment displayed by so many of its constituent species. It is with special pleasure, then, that we welcome the appearance of Dr. Diels's treatise on the flora of the south-western part of the continent. The method of treatment pursued by the author is a good one. He gives a fairly full historical account of the investigations of his predecessors, and incidentally criticises the "Flora Australensis," in common with other colonial floras, on account of the frequently insufficient data as to locality of a species. It must, however, be remembered that much of the material for these floras is collected through channels which